DOEHRS

Defense Occupational & Environmental Health Readiness System

# Introduction to the DoD Exposure Assessment Model and DOEHRS-IH

# *Learning Objectives*

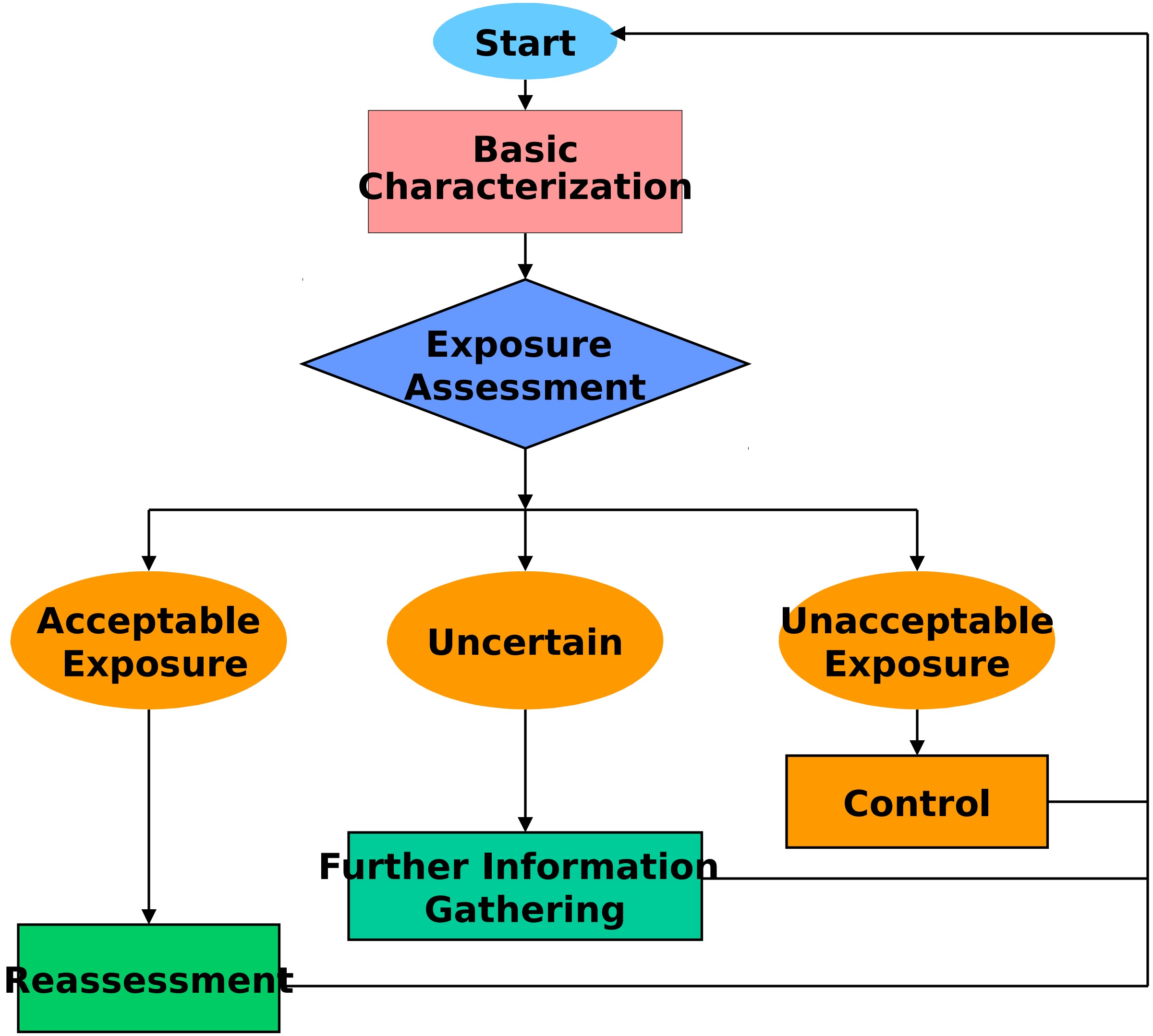
- **Describe how the DoD Exposure Assessment Model supports a standardized approach for the conduct of industrial hygiene within the DoD.**

- **Identify the steps within the DoD IH Exposure Assessment Process.**

# *DoD Process Model*

- **The DoD Industrial Hygiene Working Group, chartered under the DoD Safety and Occupational Health Committee and Defense Environmental Security Council, was requested to develop a process model for the DoD.**
- **The American Industrial Hygiene Association’s (AIHA) “Strategy for Assessing and Managing Occupational Exposures,” was used as a starting point.**

# AIHA Exposure Model

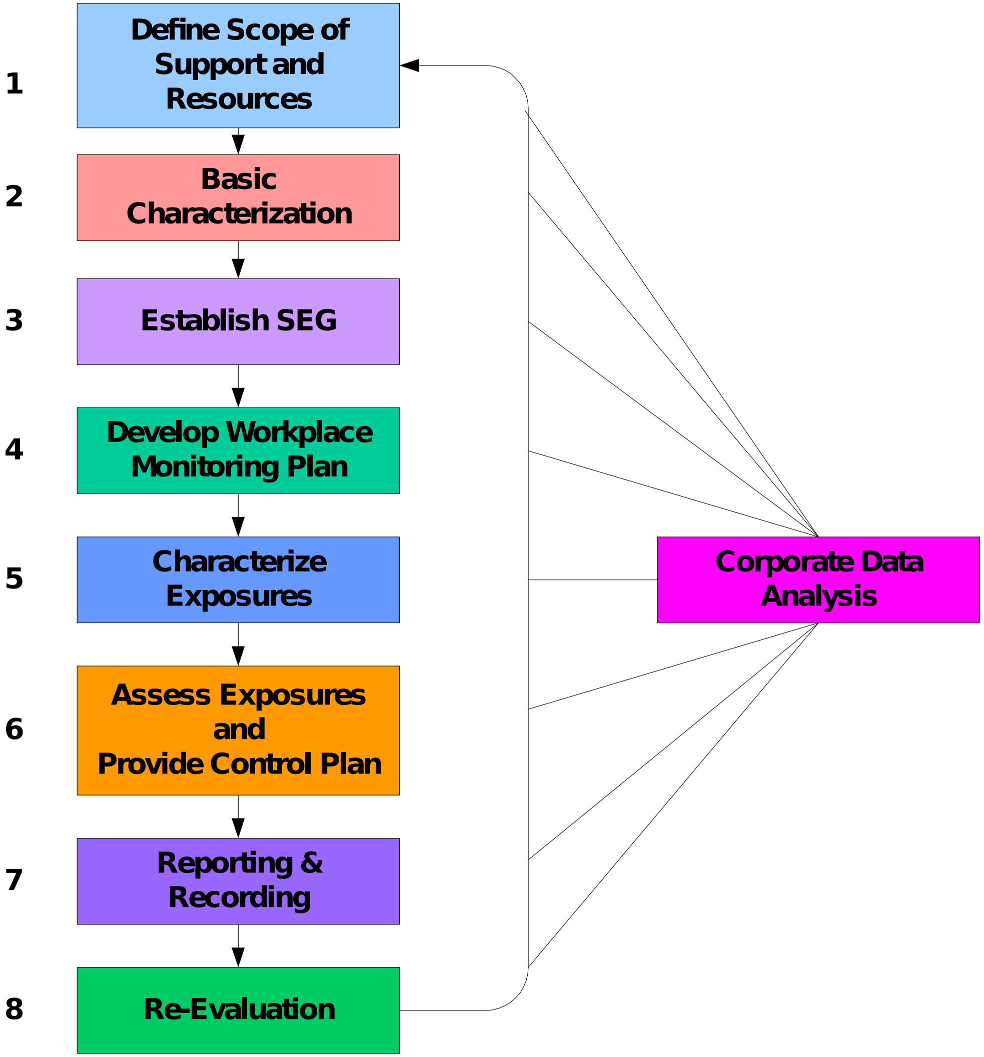


Start
Basic Characterization
Exposure Assessment
Acceptable Exposure
Uncertain
Unacceptable Exposure
Control
Further Information Gathering
Reassessment

# *DoD Process Model*

- **The model was then modified to include DoD-specific IH activities and terminology.**
- **Contributions came from the senior IH policy makers from the military departments on the IH Working Group, from intermediate headquarters, and from hygienists practicing IH daily at DoD installations.**
- **The DOEHRS system was designed on the basis of the DoD IH Exposure Assessment Model.**

# DoD IH Exposure Assessment Model



1 Define Scope of Support and Resources

2 Basic Characterization

3 Establish SEG

4 Develop Workplace Monitoring Plan

5 Characterize Exposures

6 Assess Exposures and Provide Control Plan

7 Reporting & Recording

8 Re-Evaluation

Corporate Data Analysis

# Steps 1-3

- ***Define Scope and Support of Resources*** **– The system provides capabilities for members of a Program Office to identify and track the organizations, locations, and shops they support; manage resources, including equipment and personnel; and maintain a master schedule of activities.**

- ***Basic Characterization*** **– The system provides capabilities to identify processes occurring in locations supported by the Program Office, and to identify workers, hazards, equipment, and controls associated with those processes.**

- ***Establish Similar Exposure Groups*** **– The system allows users to group workers performing like processes to allow the industrial hygienist to perform risk assessments for hazards and exposures for the group.**

# *Steps 4-6*

- ***Develop Workplace Monitoring Plan*** **– The system provides tools to develop, manage, and track a master schedule of surveys and assessments for the Program Office.**

- ***Characterize Exposures*** **– The system provides data collection forms to support over 40 types of industrial hygiene and environmental sampling.**

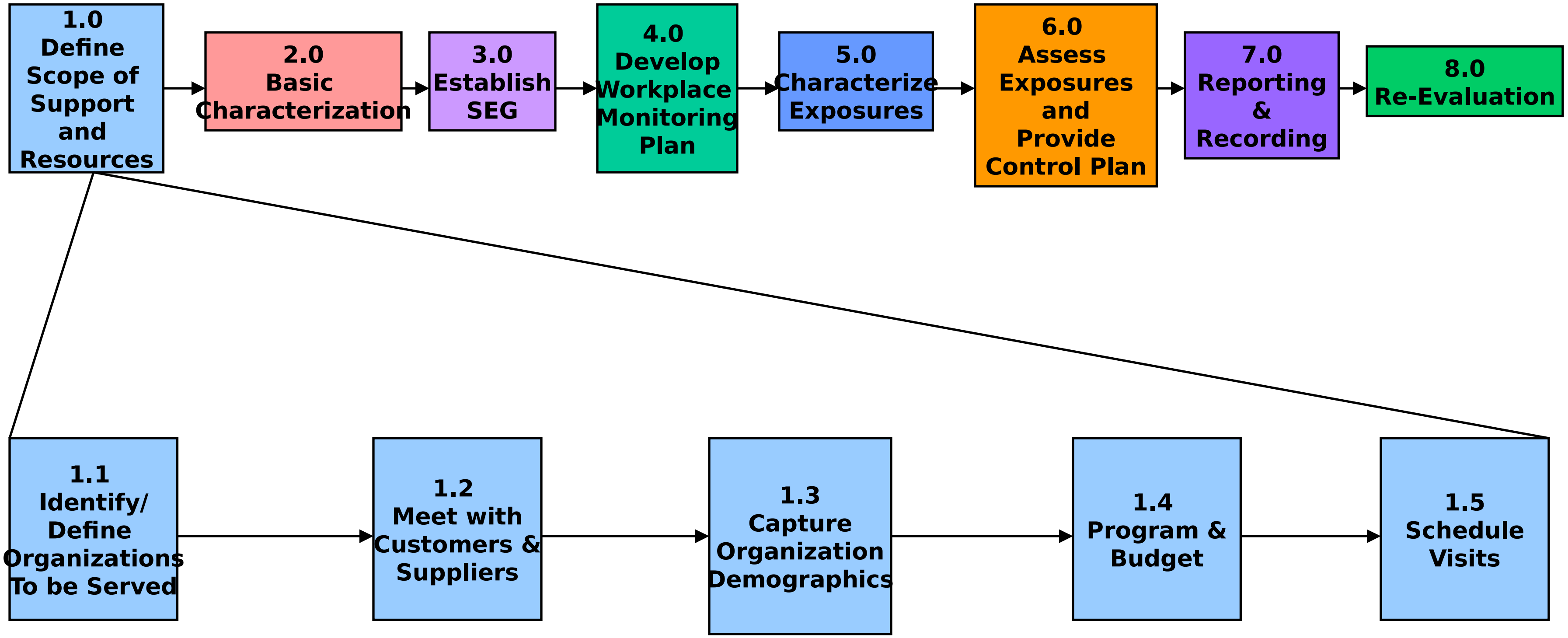
- ***Assess Exposures and Provide Control Plan*** **– The system provides tools to allow the industrial hygienist to compare exposures to occupational exposure limits (OEL) or expected negative health effects, and determine the need for corrective actions and follow-up surveillance.**

# Steps 7-8

- ***Reporting and Recording*** **– The system provides capabilities to perform quality control review of assessment and control options; compile reports for briefing commanders, supervisors, and the safety office; record exposures, conditions, and recommendations made to be tracked by Program Office; identify exposures and medical surveillance recommendations; and provide Occupational Medicine with an exposure summary for the medical records of each exposed worker.**

- ***Re-evaluation*** **– The system provides the structure for industrial hygienists to repeat the exposure assessment process to improve previous assessments and reduce risk.**

# Define Scope of Support and Resources



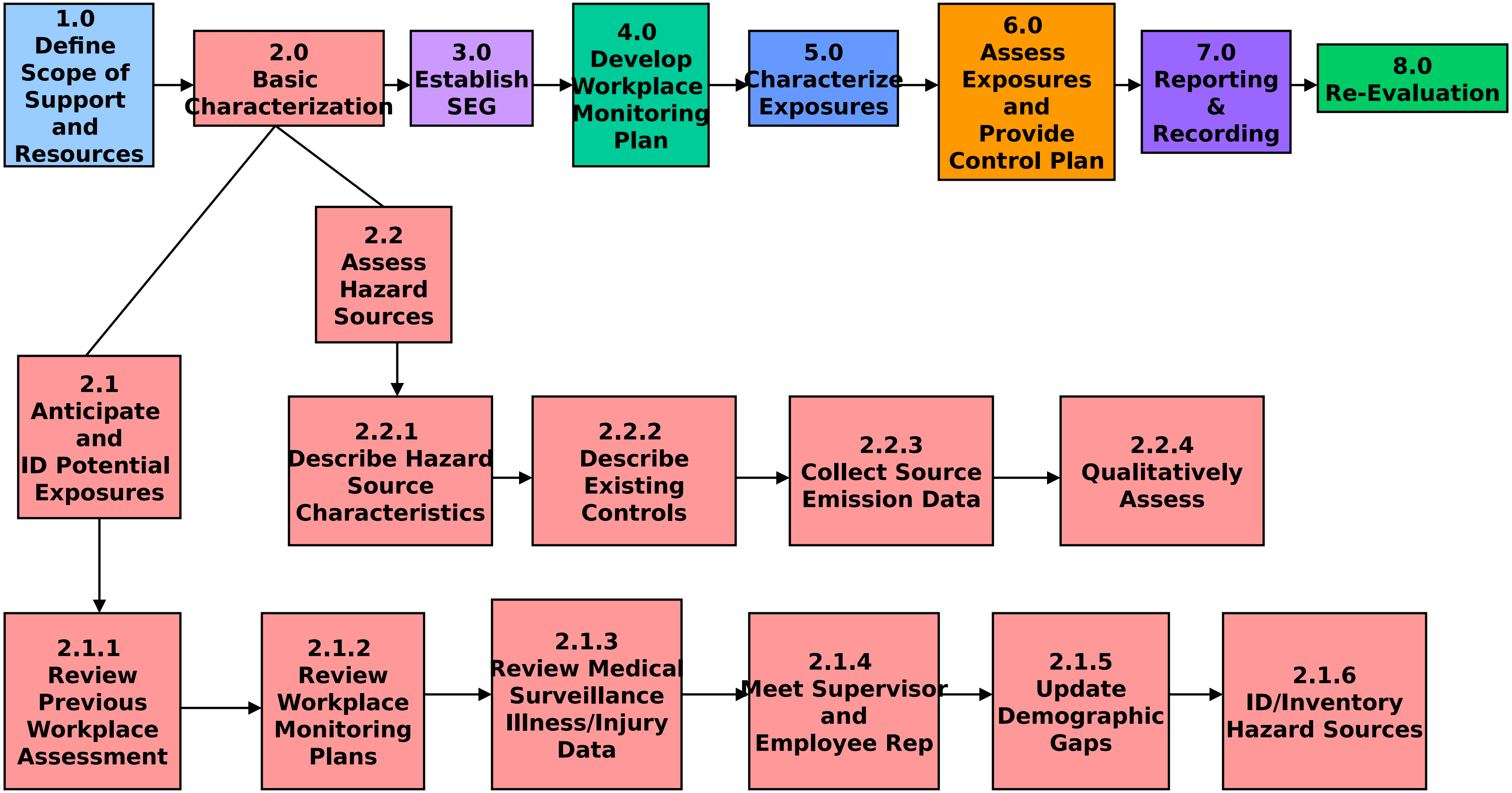
**1.0 Define Scope of Support and Resources** → **2.0 Basic Characterization** → **3.0 Establish SEG** → **4.0 Develop Workplace Monitoring Plan** → **5.0 Characterize Exposures** → **6.0 Assess Exposures and Provide Control Plan** → **7.0 Reporting & Recording** → **8.0 Re-Evaluation**

**1.1 Identify/ Define Organizations To be Served** → **1.2 Meet with Customers & Suppliers** → **1.3 Capture Organization Demographics** → **1.4 Program & Budget** → **1.5 Schedule Visits**

# *Define Scope of Support and Resources*

- List organizations
- Meet with commanders
- Capture organization demographics
- Program and budget
- Schedule visits

# Basic Characterization



**1.0** Define Scope of Support and Resources

**2.0** Basic Characterization

**3.0** Establish SEG

**4.0** Develop Workplace Monitoring Plan

**5.0** Characterize Exposures

**6.0** Assess Exposures and Provide Control Plan

**7.0** Reporting & Recording

**8.0** Re-Evaluation

**2.1** Anticipate and ID Potential Exposures

**2.2** Assess Hazard Sources

**2.2.1** Describe Hazard Source Characteristics

**2.2.2** Describe Existing Controls

**2.2.3** Collect Source Emission Data

**2.2.4** Qualitatively Assess

**2.1.1** Review Previous Workplace Assessment

**2.1.2** Review Workplace Monitoring Plans

**2.1.3** Review Medical Surveillance Illness/Injury Data

**2.1.4** Meet Supervisor and Employee Rep

**2.1.5** Update Demographic Gaps

**2.1.6** ID/Inventory Hazard Sources

# *Basic Characterization*

**Anticipate and identify potential exposures**

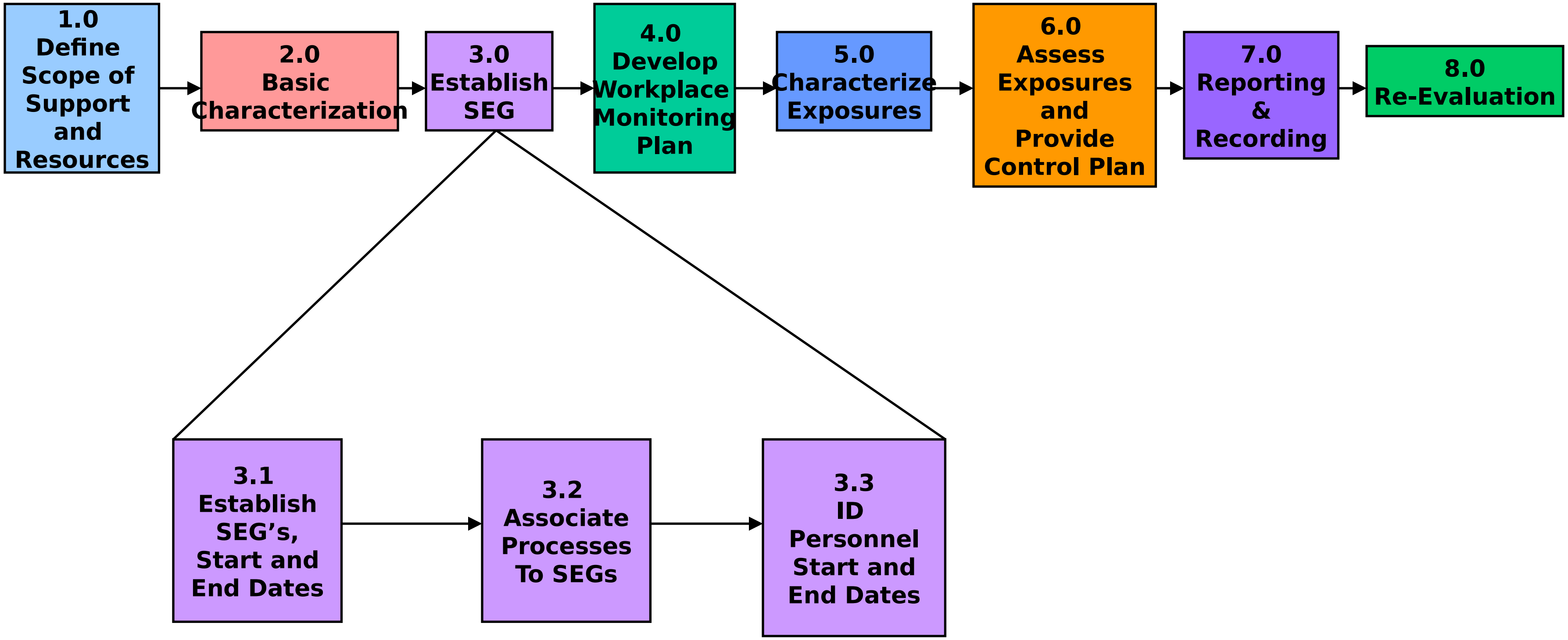
- **Review previous assessments**
- **Review monitoring plans**
- **Review existing medical surveillance**
- **Meet with supervisors**
- **Update demographic data**
- **Identify/inventory hazards**

# *Basic Characterization*

**Assess Hazard Sources**

- **Describe hazard operating characteristics**
- **Describe existing controls**
- **Collect emission data**
- **Qualitatively assess data**

# Establish SEGs



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8.0 Re-Evaluation

3.1 Establish SEG's, Start and End Dates

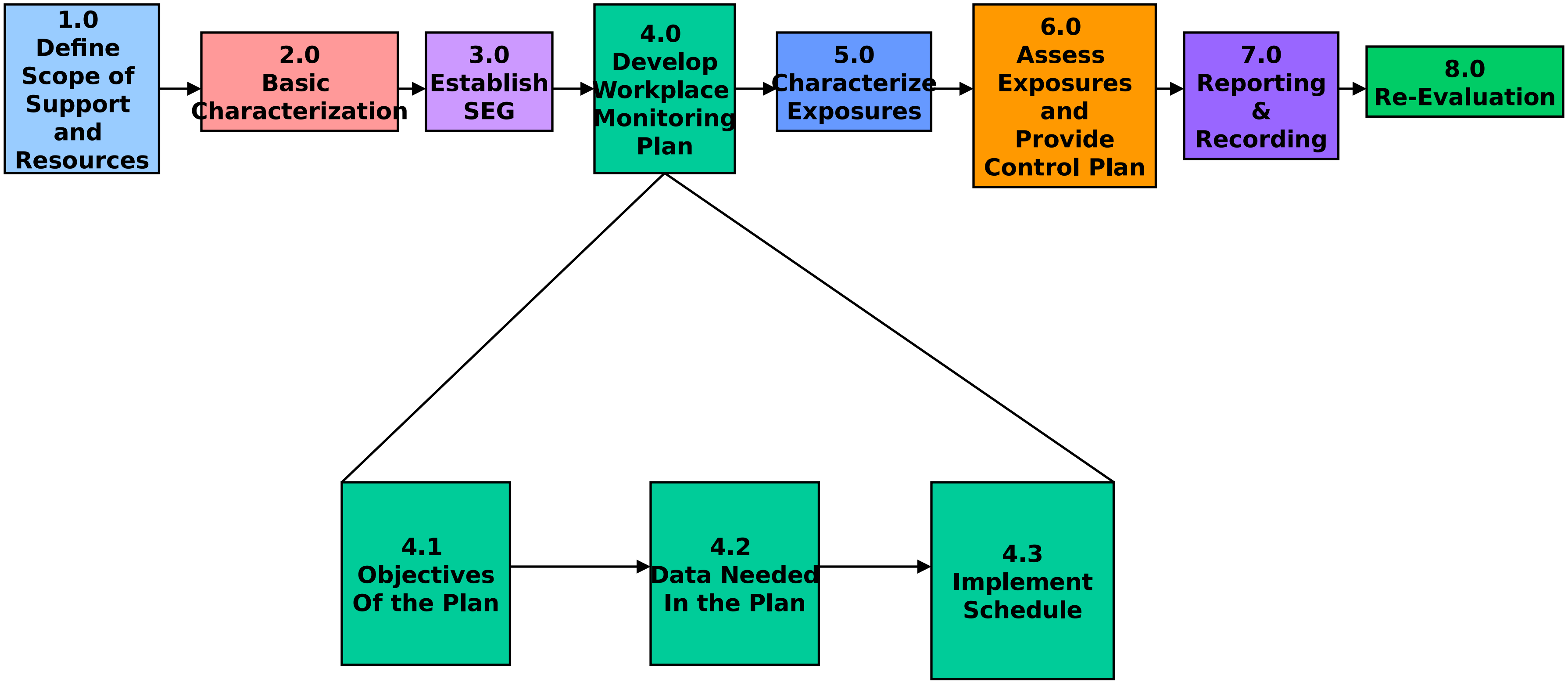
3.2 Associate Processes To SEGs

3.3 ID Personnel Start and End Dates

# *Establish SEGs*

- **Establish SEGs**
- **Identify processes for each SEG**
- **Identify each person assigned to a SEG**

# Develop Workplace Monitoring Plan



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7.0 Reporting & Recording

8.0 Re-Evaluation

4.1 Objectives Of the Plan

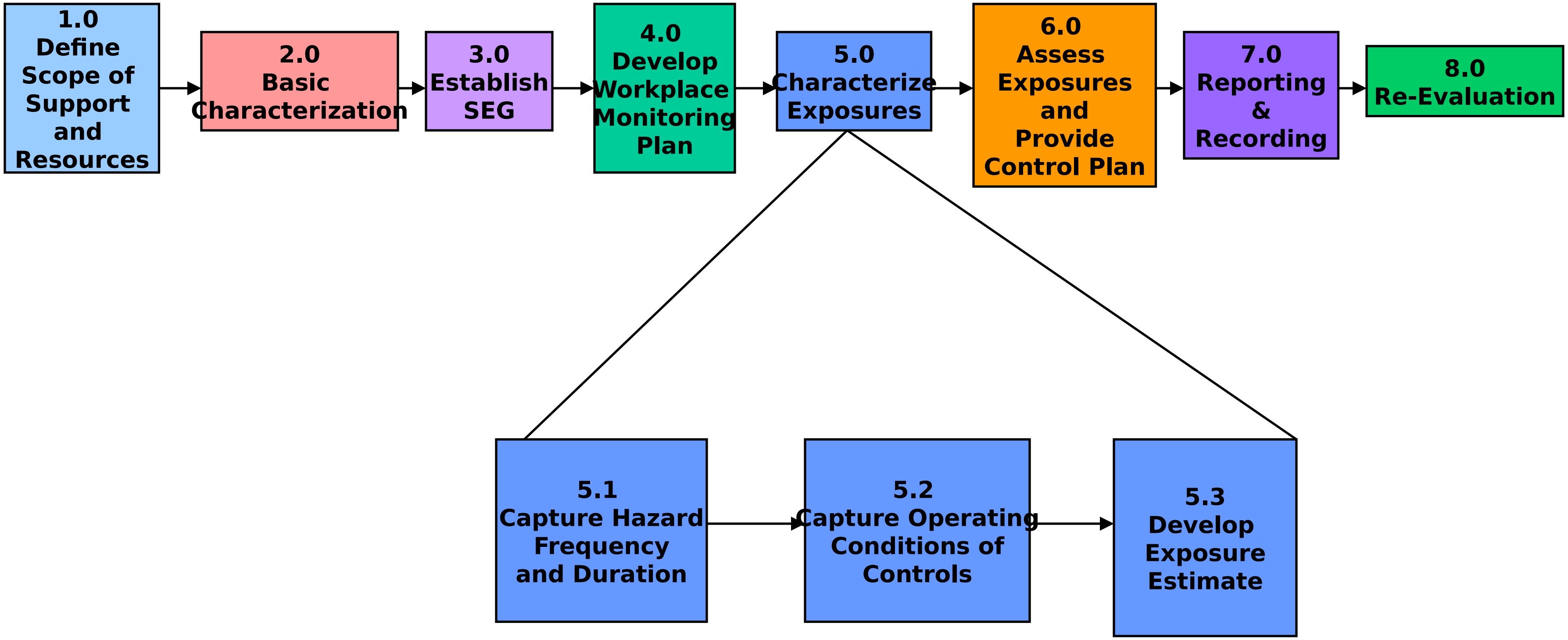
4.2 Data Needed In the Plan

4.3 Implement Schedule

# *Develop Workplace Monitoring Plan*

- **Objective of the plan**
- **Data needed in the plan includes:**
  - **Hazard and SEG monitoring**
  - **Purpose of monitoring**
  - **Procedures for measuring exposures or controls**
  - **Number of measurements**
  - **Type of sample or measurement**
  - **Location type**
  - **Location description**
  - **Conditions required for monitoring**
  - **Standards used to compare to results**
  - **Data analysis procedures**

# Characterize Exposures



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5.1 Capture Hazard Frequency and Duration

5.2 Capture Operating Conditions of Controls

5.3 Develop Exposure Estimate

# *Characterize Exposures*

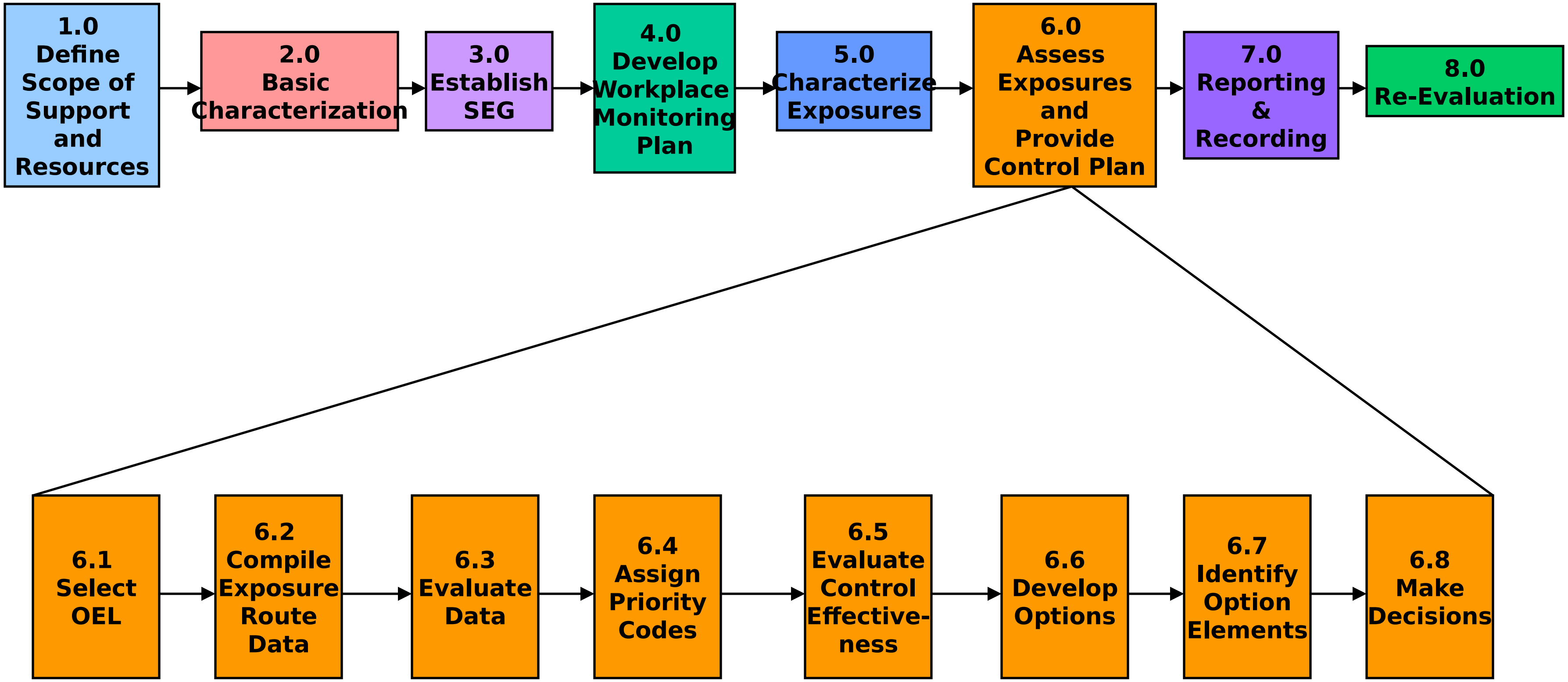
Capture Frequency and Duration

Capture Operating Condition of Controls

Develop Exposure Estimate

- Directly measure exposures
- Estimate exposures from similar operations
- Model exposures from estimates of exposure conditions
- Make exposure estimate based on professional experience

# Assess Exposures and Provide Control Plan



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**7.0 Reporting & Recording**

**8.0 Re-Evaluation**

**6.1 Select OEL**

**6.2 Compile Exposure Route Data**

**6.3 Evaluate Data**

**6.4 Assign Priority Codes**

**6.5 Evaluate Control Effective-ness**

**6.6 Develop Options**

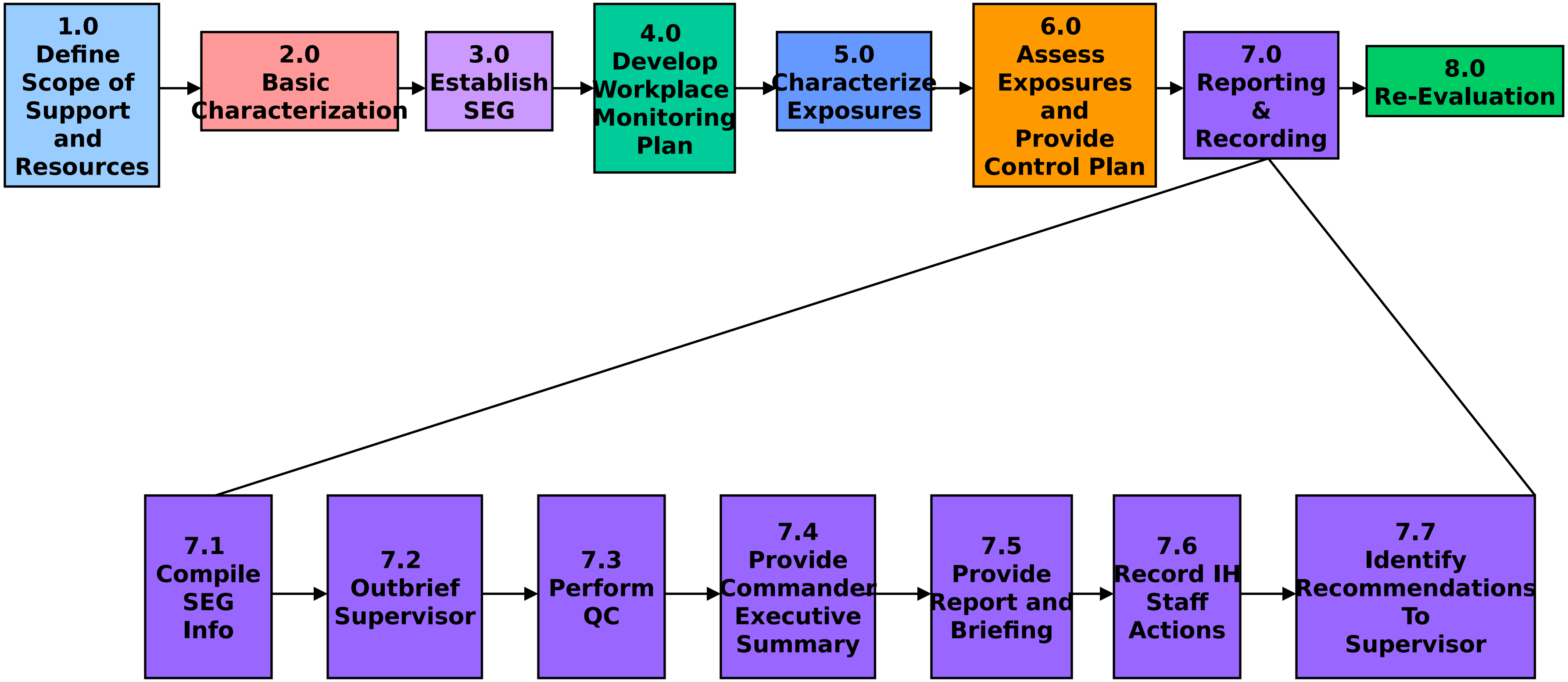
**6.7 Identify Option Elements**

**6.8 Make Decisions**

# *Assess Exposures and Provide Control Plan*

- **Select OEL**
- **Compile data**
- **Evaluate data**
- **Calculate and assign codes**
- **Evaluate effectiveness**
- **Develop options**
- **Identify element of options**
- **Make final determination**

# Reporting and Recording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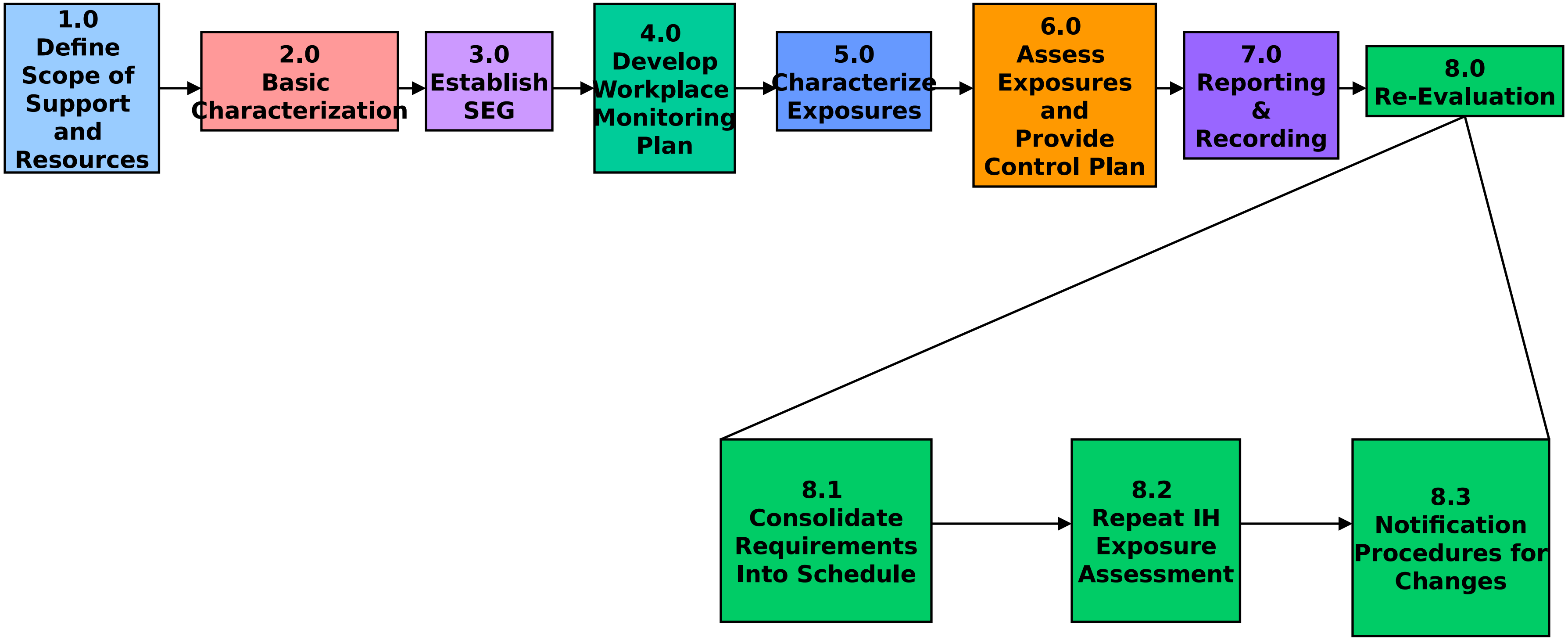
6.0 Assess Exposures and Provide Control Plan
7.0 Reporting & Recording
8.0 Re-Evaluation
7.1 Compile SEG Info
7.2 Outbrief Supervisor
7.3 Perform QC
7.4 Provide Commander Executive Summary
7.5 Provide Report and Briefing
7.6 Record IH Staff Actions
7.7 Identify Recommendations To Supervisor

# *Reporting and Recording*

- Compile information on each SEG
- Verbally out-brief workplace supervisor
- Perform quality control review of assessment and control options
- Provide executive summary/briefing to commander
- Provide full report and briefing to workplace evaluation to workplace commander/supervisor
- Record exposures, conditions and recommendations
- Identify exposures and medical surveillance recommendations

# Re-Evaluation



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7.0 Reporting & Recording

8.0 Re-Evaluation

8.1 Consolidate Requirements Into Schedule

8.2 Repeat IH Exposure Assessment

8.3 Notification Procedures for Changes

# *Re-Evaluation*

- **Consolidate requirements**
- **Repeat assessment process**
- **Establish procedures for organization to notify of IH or process changes**

DOEHRS
Defense Occupational & Environmental
Health Readiness System

# Introduction to DOEHRS-IH

# *Learning Objectives*

- **Describe health-tracking issues identified after the Gulf War.**
- **Given a list, select key enabling technologies of DOEHRS in the Force Health Protection Program.**
- **Identify where the key steps of the DoD IH Exposure Assessment Model are located in DOEHRS-IH.**

# *Health Tracking Issues*

- **First Persian Gulf War – 1991**
- **Member complaints of unexplained illnesses**
- **Other health problems**
- **Outdated Tracking Systems**
- **Gulf War Syndrom**

Gulf War Illnesses

# *Corrective Steps Taken*

- **Presidential Advisory Committee, on Gulf War Veterans' Illnesses (PAC) – 1995**
- **Final Report - 1996**
- **Presidential Review Directive (PRD)/National Science and Technology Council (NSTS-5) directed the DoD, VA, HHS to review policies and programs and develop plans to safeguard individuals**

# *Opportunities for Improvement*

- Improving service personnel's understanding of health risk information
- Enhancing government collection of health and exposure data
- Coordinating agency research programs
- Improving the delivery of health care services to veterans and their families
- Establishing effective linkages between health information systems

# *Presidential Directive*

**8 November 1997, President Clinton issued the following directive statement:**

**"I am directing the Departments of Defense and Veterans Affairs to create a new Force Health Protection Program. Every soldier, sailor, airman and Marine will have a comprehensive, life-long medical record of all illnesses and injuries they suffer, the care and inoculations they receive and their exposure to different hazards. These records will help us prevent illness and identify and cure those that occur…"**

# *Public Law*

November 18, 1997, Public Law 105-85. Public Law 105-85, Subtitle F, Section 765 signed

- Improved medical tracking
- Medical examinations, before and after operational deployments
- Accurately record the medical condition, before and after operational deployments

# *DoD Directives*

- **Department of Defense Directive (DoDD) 6490.2, Comprehensive Medical Surveillance**
- **Department of Defense Instruction (DoDI) 6490.3, Implementation and Application of Joint Medical Surveillance for Deployment**

# *DoD Instructions*

- DoD Instructions 6055.1, DoD Safety and Occupational Health (SOH) Program
- DoD Instructions 6055.5, IH and Occupational Health; and implementing DoD publications
- Joint Chief of Staff Memorandum MCM-0006-02, Updated Procedures for Deployment and Health Surveillance And Readiness

# *DOEHRS Development*

- Defense Health Services Systems (DHSS)
  - Formerly RITPO
  - Managing Development
- Northrop Grumman - Developer
- JAD - Subject Matter Experts/ CCB – Configuration Control Board

# *Key Enabling Technology*

**DOEHRS is a key enabling technology of the Force Health Protection Program by:**

- **Maintaining a longitudinal exposure record**
- **Enhancing readiness**
- **Improving the quality of OH and EH care**
- **Preventing illness and injury**
- **Integrating with other MHS systems**

# *Legacy Systems*

- DOEHRS is replacement for service specific applications
- Provide capability where none exists
- Reduction in redundant data entry
- Data sharing
- Interfaces to other systems

# *Legacy Systems*

**Air Force Systems**

- **Command Core System (CCS)**
- **BEE Manager**
- **Air Program Information Management System (APIMS)**
- **Air Force Environmental Management Information System (AF-EMIS)**
- **Hazardous Material Management System (HMMS)**
- **Automated Civil Engineering System-Environmental Management (ACES-EM)**
- **Enterprise Environmental Safety and Occupational Health-Management Information System (EESOH-MIS)**

# *Legacy Systems*

**Army**

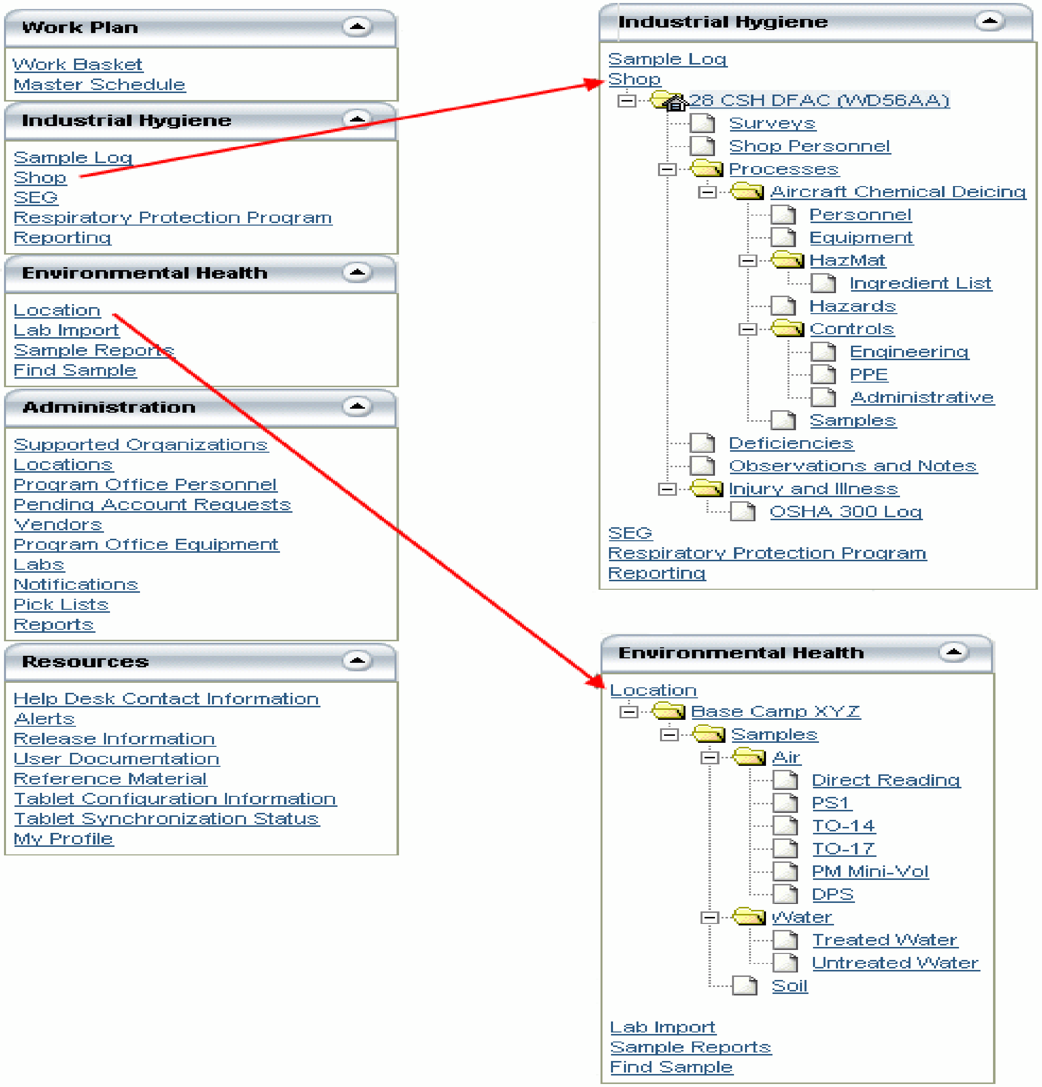
- **Health Hazard Information Management (HHIM)**
- **Deployment Occupational & Environmental Health Surveillance (DOEHS)**

# *Legacy Systems*

## Navy

- **Industrial Hygiene Information Management System (IHIMS) (http://www-nehc.med.navy.mil/ih/ihims.htm)**
- **Annually, this data is screened and rolled up to support the Navy Occupational Exposure Database (NOED) maintained by the Navy Environmental Health Center (NEHC). The NOED is basically the compilation of data from IHIMS users (and additional non-IHIMS users). Legacy IH data from the NOED will be provided by the Navy in the established data model format for inclusion into DOEHRS**

# Menu Tree



**Work Plan**

- Work Basket
- Master Schedule

**Industrial Hygiene**

- Sample Log
- Shop
- SEG
- Respiratory Protection Program
- Reporting

**Environmental Health**

- Location
- Lab Import
- Sample Reports
- Find Sample

**Administration**

- Supported Organizations
- Locations
- Program Office Personnel
- Pending Account Requests
- Vendors
- Program Office Equipment
- Labs
- Notifications
- Pick Lists
- Reports

**Resources**

- Help Desk Contact Information
- Alerts
- Release Information
- User Documentation
- Reference Material
- Tablet Configuration Information
- Tablet Synchronization Status
- My Profile

**Industrial Hygiene**

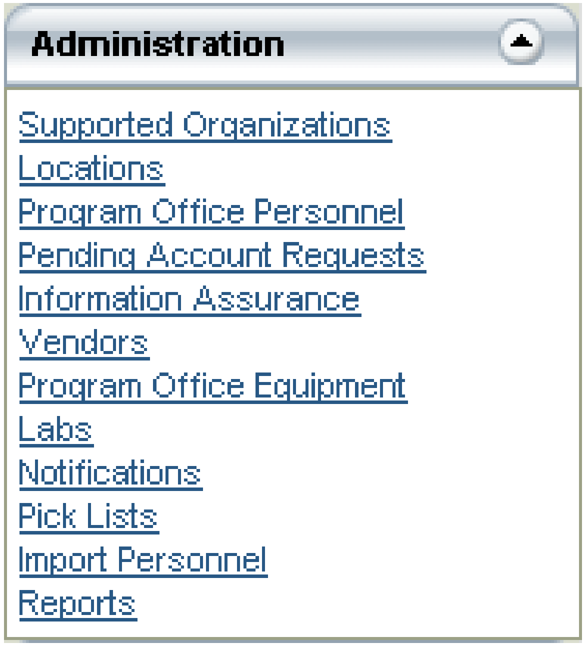
- Sample Log
- Shop
  - 28 CSH DFAC (WD56AA)
    - Surveys
    - Shop Personnel
    - Processes
      - Aircraft Chemical Deicing
        - Personnel
        - Equipment
        - HazMat
          - Ingredient List
        - Hazards
        - Controls
          - Engineering
          - PPE
          - Administrative
        - Samples
    - Deficiencies
    - Observations and Notes
    - Injury and Illness
      - OSHA 300 Log
- SEG
- Respiratory Protection Program
- Reporting

**Environmental Health**

- Location
  - Base Camp XYZ
    - Samples
      - Air
        - Direct Reading
        - PS1
        - TO-14
        - TO-17
        - PM Mini-Vol
        - DPS
      - Water
        - Treated Water
        - Untreated Water
      - Soil
- Lab Import
- Sample Reports
- Find Sample

# *Location of Information*

**Program Office equipment is tracked under Administration.**

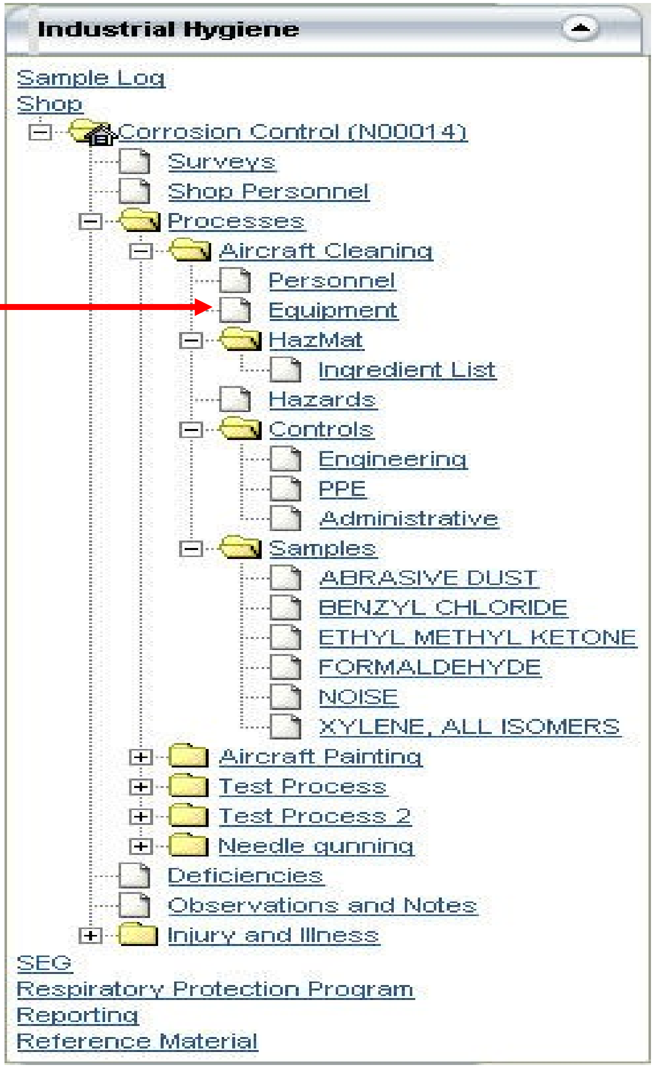


**Administration**

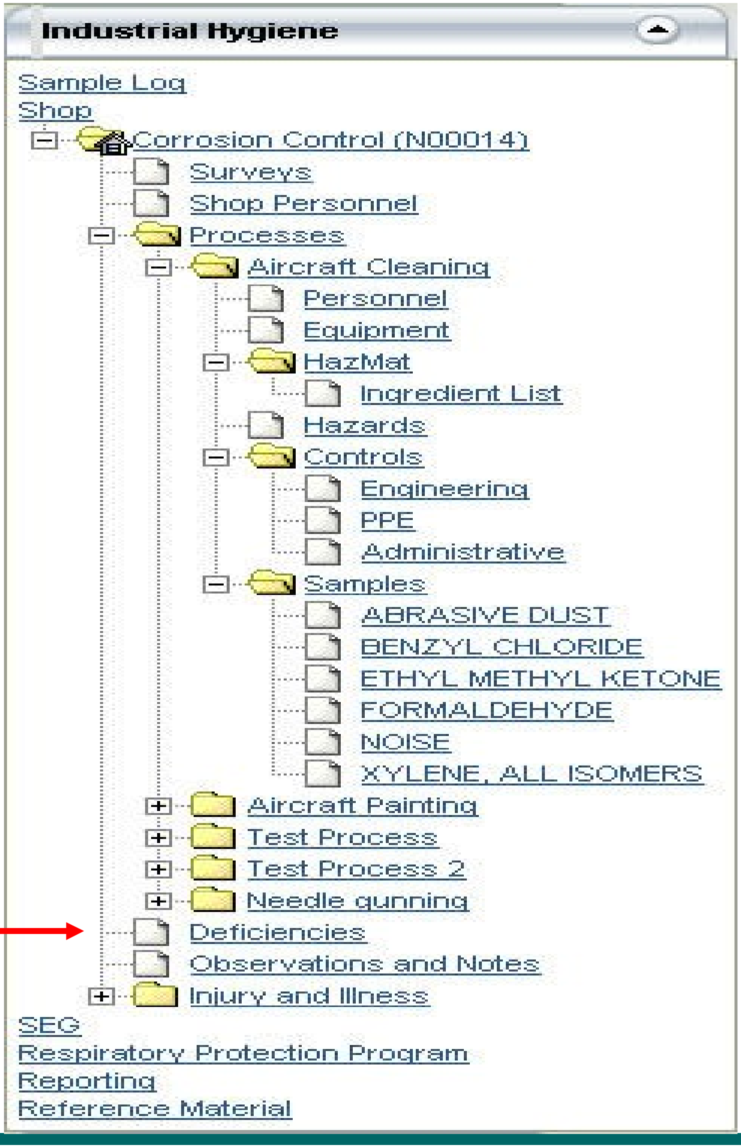
Supported Organizations
Locations
Program Office Personnel
Pending Account Requests
Information Assurance
Vendors
Program Office Equipment
Labs
Notifications
Pick Lists
Import Personnel
Reports

# Location of Information

Shop equipment is tracked under a process assigned to a shop. This includes RF Emitter, Laser, X-Ray, and Radioactive Material Sources. Surveys for equipment are also performed in this area.


Industrial Hygiene
Sample Log
Shop
Corrosion Control (N00014)
Surveys
Shop Personnel
Processes
Aircraft Cleaning
Personnel
Equipment
HazMat
Ingredient List
Hazards
Controls
Engineering
PPE
Administrative
Samples
ABRASIVE DUST
BENZYL CHLORIDE
ETHYL METHYL KETONE
FORMALDEHYDE
NOISE
XYLENE, ALL ISOMERS
Aircraft Painting
Test Process
Test Process 2
Needle gunning
Deficiencies
Observations and Notes
Injury and Illness
SEG
Respiratory Protection Program
Reporting
Reference Material

# Location of Information



**Industrial Hygiene**

- Sample Log
- Shop
  - Corrosion Control (N00014)
    - Surveys
    - Shop Personnel
    - Processes
      - Aircraft Cleaning
        - Personnel
        - Equipment
        - HazMat
          - Ingredient List
        - Hazards
        - Controls
          - Engineering
          - PPE
          - Administrative
        - Samples
          - ABRASIVE DUST
          - BENZYL CHLORIDE
          - ETHYL METHYL KETONE
          - FORMALDEHYDE
          - NOISE
          - XYLENE, ALL ISOMERS
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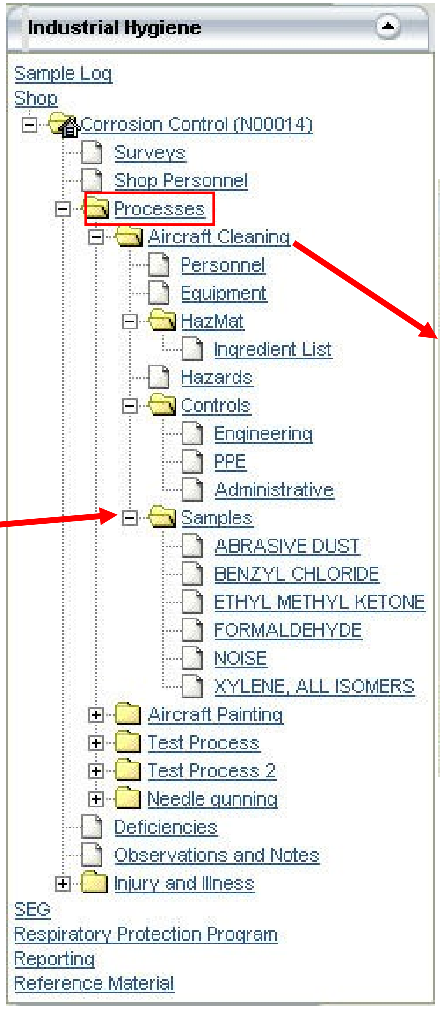
      - Test Process
      - Test Process 2
      - Needle gunning
    - Deficiencies
    - Observations and Notes
    - Injury and Illness
- SEG
- Respiratory Protection Program
- Reporting
- Reference Material

**Risk Assessment Codes are assigned in the Deficiencies section under a shop.**

# *Location of Information*

**Sampling is performed for identified processes in a shop or at the SEG level.**



**Industrial Hygiene**

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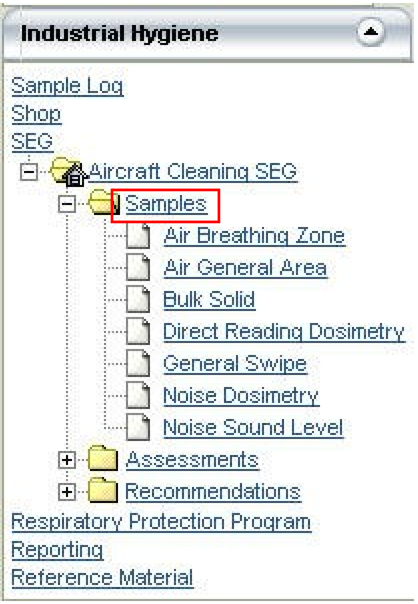
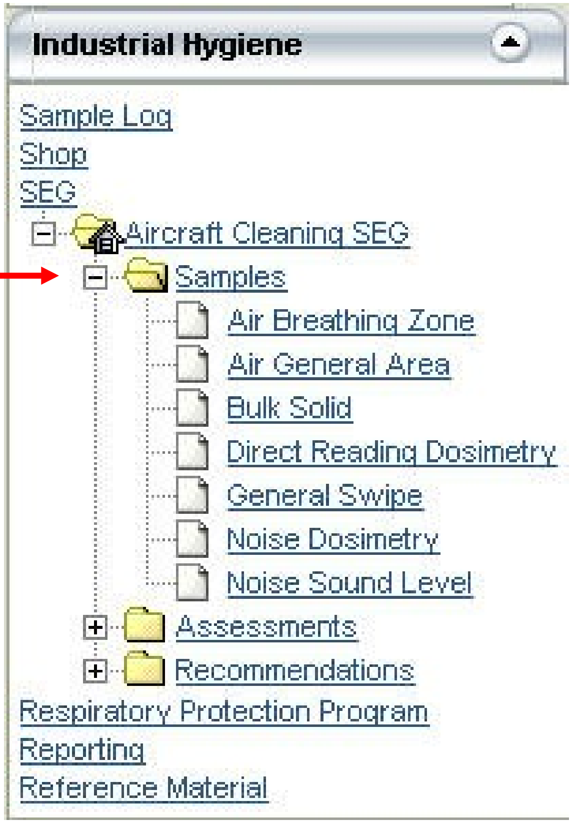


**Industrial Hygiene**

- Sample Log
- Shop
- SEG
  - Aircraft Cleaning SEG
    - Samples
      - Air Breathing Zone
      - Air General Area
      - Bulk Solid
      - Direct Reading Dosimetry
      - General Swipe
      - Noise Dosimetry
      - Noise Sound Level
    - Assessments
    - Recommendations
- Respiratory Protection Program
- Reporting
- Reference Material

# *Location of Information*

**Sampling Time Weighted Average calculations are performed in the Samples area under a SEG.**



Industrial Hygiene
Sample Log
Shop
SEG
Aircraft Cleaning SEG
Samples
Air Breathing Zone
Air General Area
Bulk Solid
Direct Reading Dosimetry
General Swipe
Noise Dosimetry
Noise Sound Level
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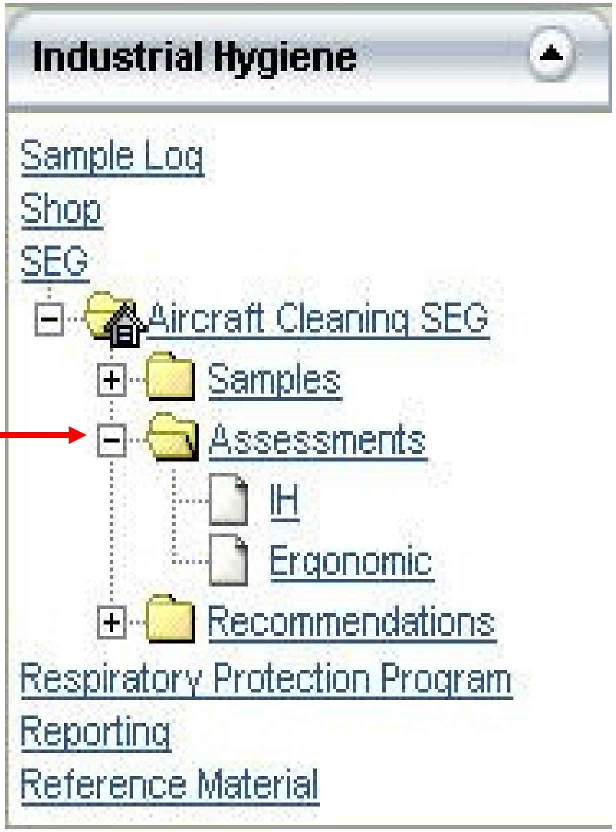
# *Location of Information*

**Exposure Assessments and Statistical analysis are performed at the SEG. Select SEG -> Assessments -> IH**


Industrial Hygiene
Sample Log
Shop
SEG
Aircraft Cleaning SEG
Samples
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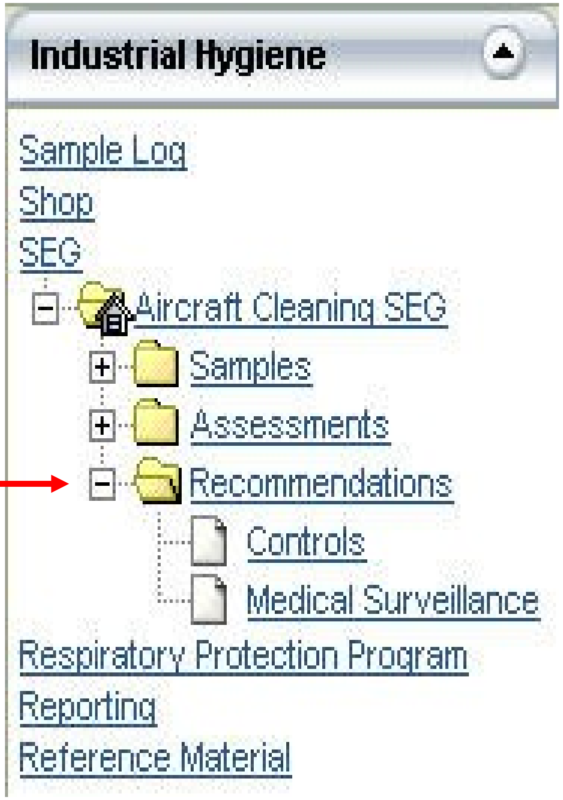
# *Location of Information*

**Control and Medical Surveillance recommendations are made in the Recommendations section under a SEG.**



Industrial Hygiene
Sample Log
Shop
SEG
Aircraft Cleaning SEG
Samples
Assessments
Recommendations
Controls
Medical Surveillance
Respiratory Protection Program
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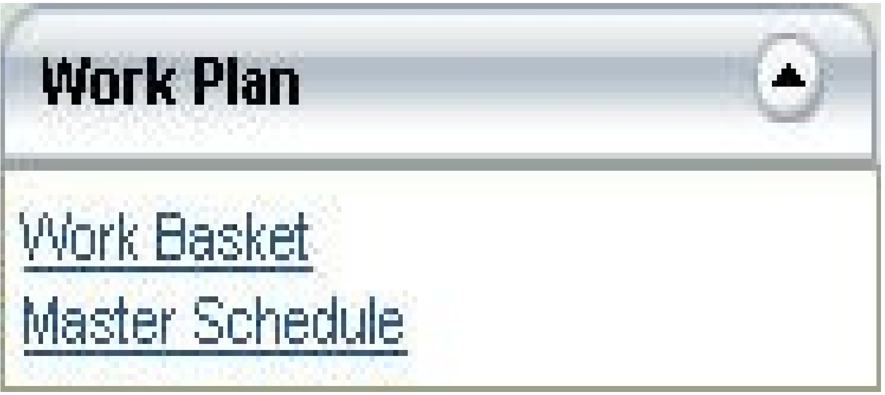
Reference Material

# *Location of Information*

**Ergonomic Evaluations, Indoor Air Quality Assessment, HVAC Surveys, and similar tasks are initially created in the Master Schedule.**


Work Plan
Work Basket
Master Schedule

# *DOEHRS Review Summary*

**DOEHRS is a key enabling technology of the Force Health Protection Program by:**

- **Maintaining a longitudinal exposure record**
- **Enhancing readiness**
- **Improving the quality of OH and EH care**
- **Preventing illness and injury**
- **Integrating with other MHS systems**